

A Micro-Electro-Mechanical Switch (MEMS) Display Panel with On-Glass Column Multiplexers Using MEMS as Mux Elements

Abstract

A display has an array of Micro-Electro-Mechanical Switches (MEMS) display elements on a substrate such as glass. Rather than directly drive all columns of the MEMS display elements from off-substrate column drivers, column mux logic is placed on the substrate. The column mux logic uses MEMS contact-switch elements that have additional contact electrodes that touch and make electrical connection when the MEMS switch is closed, but do not touch and isolate the contact electrodes from each other when the MEMS switch is open. Smaller data words of column data is successively loaded into and stored by the MEMS column-mux, which then drives the columns of the display array. The smaller data words require fewer off-substrate connections than if all columns were driven by the off-substrate drivers. An intermediate holding voltage is applied to store column data in the column mux. Off-

substrate interconnect is further reduced using on-substrate row-mux MEMS.